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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/063,710	05/08/2002	Dan L. Eaton	P3230R1C001-168	8520

30313 7590 02/08/2005

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IRVINE, CA 92614

EXAMINER	
KAUFMAN, CLAIRE M	

ART UNIT	PAPER NUMBER
1646	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/063,710	EATON ET AL.	
	Examiner	Art Unit	
	Claire M Kaufman	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 May 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 May 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/17/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC §§ 101/112, First Paragraph

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-20 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

The claims are drawn as narrowly to a nucleic acid comprising SEQ ID NO:75 or as broadly to a nucleic acid at least 80% identical to a nucleic acid encoding an extracellular domain of SEQ ID NO:76. The specification asserts a number of utilities for the encoding nucleic acid, however, these utilities are not specific and substantial or well established. The encoding nucleic acid cannot derive a utility from the encoded polypeptide because there is neither a known physiological or clinical significance of the polypeptide, and the prior art does not support a very close structural relationship to a well described (structurally and functionally) family of known proteins.

An asserted utility is in drug screening and rational drug design (Examples 12 and 13, respectively). The method involves screening for "agents which can affect a PRO polypeptide-associated disease or disorder" (p. 135, ¶[0507]). No disease or disorder is known to be associated with the claimed polypeptide or encoding nucleic acid. The use of a nucleic acid in an array for screening is only useful in the sense that the information that is gained from the array is dependent on the pattern derived from the array, and says nothing with regard to each individual member of the array. This is a utility which would apply to virtually ever member of a general class of materials, such as any collection of proteins or DNAs. Even if the expression of the claimed nucleic acid is affected by a test compound in an array for drug screening, the specification does not disclose any specific and substantial interpretation for the result, and none

is known in the art. Given this consideration, the individually claimed nucleic acid has no "well-established" use. The artisan is required to perform further experimentation on the claimed material itself in order to determine to what use any expression information regarding this nucleic acid could be put.

The need to know expression levels instead of relying on vague terms such as "more highly expressed" is illustrated in the following research article: Hu et al. (2003, Journal of Proteome Research 2:405-412) analyzed 2286 genes that showed a greater than 1-fold difference in mean expression level between breast cancer samples and normal samples in a micoarray (p. 408, middle of right column). Hu et al. discovered that, for genes displaying a 5-fold change or less in tumors compared to normal, there was no evidence of a correlation between altered gene expression and a known role in the disease. However, among genes with a 10-fold or more change in expression level, there was a strong and significant correlation between expression level and a published role in the disease (see discussion section).

Another possible utility comes from the finding that the encoding polynucleotide is "more highly expressed" in esophageal tumors as compared to normal esophagus tissue (Example 18, p. 142). There is no guidance on how to use this information. No levels (relative or absolute) are disclosed. This information is too sparse to allow the encoding polynucleotide to be used as a diagnostic marker for esophageal tumors. It is not disclosed what type(s) of esophageal tumor was analyzed. It is not clear if the finding can be generalized to all tumors from that tissue type. The skilled artisan trying to use the results for diagnostic purposes would not know if the results were significant or under what conditions a difference in expression could be detected. It is not clear, for example, if overexpression occurred in 1/10 or 10/10 esophageal tumors in pooled sample of 10, with the possibility that extremely high levels from one esophageal tumor made levels in a *pooled* sample detectable even though the other nine esophageal tumors in the pool had normal levels. Without more specifics about necessary sample size, expression level range for normal and tumor tissues, and other factors, the specification has not provided the invention in a form readily usable by the skilled such that significant further experimentation is unnecessary. Because it is not known if the nucleic acid is involved in causing (or suppressing) the tumor, the skilled artisan could not use it therapeutically as target for treatment of a tumor. It is noted that even if the nucleic acid had utility as a tumor

marker, the encoded polypeptide would have no such utility since there is no reason to suspect that there is alteration of polypeptide sequence or amount in esophageal tumor *versus* normal tissue.

For these reasons, there is no substantial and specific utility for the nucleic acid of SEQ ID NO:75.

Claims 1-20 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

The specification does not provide sufficient guidance or working examples to be able to use the nucleic acid diagnostically or therapeutically, for example in association with esophageal tumors, to be able to use the claimed invention without undue experimentation. It would require significant further experimentation to be able to use the claimed nucleic acid also because no definite function has been determined for the encoded protein and there is no definite function supported by the prior art.

Claims 1-6, 9, 10 and 14-20 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to nucleic acids having at least 80%, 85%, 90%, 95% or 99% sequence identity with a particular disclosed sequence or which hybridizes to a disclosed sequence. The claims do not require that the nucleic acid or encoded polypeptide possess any particular biological activity, nor any particular conserved structure, or other disclosed distinguishing feature. Thus, the claims are drawn to a genus of nucleic acids that is defined only by sequence identity.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus.

The factors to be considered include disclosure of compete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factor present in the claim is a partial structure in the form of a recitation of percent identity. There is not even identification of any particular portion of the structure that must be conserved. Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus. Which nucleic acids of the genus comprising the required sequence are part of the invention has not been set forth.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of polypeptides, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only isolated nucleic acid comprising the sequence set forth in SEQ ID NO: 75 (or the full-length coding sequence of the cDNA deposited under ATCC 203317) or the extracellular domain thereof, or encoding the polypeptide of SEQ ID NO:76 or the extracellular domain thereof, any with our without its signal sequence, but not the full breadth of the claim meets the written description provision of 35 U.S.C. § 112, first paragraph. Applicant is

reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. § 112 is severable from its enablement provision (see page 1115).

Claim Rejections - 35 USC § 112, Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14, 15 and dependent claim 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 14 and 15 and dependent claim 16 are also indefinite because the metes and bounds of the claims are not clear. There are no conditions of stringency discussed in claims 14 or 15. It is not clear for claim 14 if non-specific hybridization is included in which structural relatedness is of little consequence. Further, while the skilled artisan understands the general concept of hybridization under "stringent conditions", what specific conditions are intended by the use of the term "stringent" in claim 15 is unknown. The specification discusses stringent conditions through examples without providing a limiting definition (see ¶[0227]). What conditions of stringency are used in any particular situation are determined by the specificity of hybridization desired by the practitioner. In this case, the desired specificity is unknown. If there is a structural relatedness (limitation) that is being defined by the conditions, then those conditions or range of conditions must be clear in the claim.

35 U.S.C. § 102

The following rejection under 35 U.S.C. § 102 is made under the assumption that the effective filing date for the instantly claimed invention is 05/08/2002, which is the actual filing date of the instant application. Applicant is advised that the instant application can only receive benefit under 35 U.S.C. §120 from an earlier application which meets the requirements of 35 U.S.C. § 112, first paragraph, with respect to the new claimed invention. Because the instant application does *not* meet the requirements of 35 U.S.C. § 112, first paragraph, for the reasons given above and it is a continuing application of Serial Number 10/006,867, the prior application

also does not meet those requirements for the claimed invention and, therefore, is unavailable under 35 U.S.C. § 120.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 8-10, 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by GenBank Accession AF184971.

GenBank Accession AF184971 teaches a nucleic acid which is 89% identical to SEQ ID NO:75 of the instant application and 99.9% identical to nucleic acids 191-1743 (the coding area beginning after the signal sequence coding region; see below sequence comparison). This nucleic acid would hybridize according to the limitations of claims 14-16 of the instant application. AF184971 encodes the protein of SEQ ID NO:76 lacking its associated signal sequence.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6 and 17-20 rejected under 35 U.S.C. 103(a) as being unpatentable over GenBank Accession AF184971 as applied to claims 1-6 above, and further in view of US 5,874,561.

GenBank Accession AF184971 does not teach the nucleic acid in a vector or host cell.

US 5,874,561 teaches in col. 9, lines 15-67, well known and publicly available expression vectors and host cells, including *E. coli* and yeast. It would have been obvious at the time the invention was made to have the GenBank nucleic acid in a vector and have the vector in a host cell such as *E. coli* for the well known and routine purpose of nucleic acid amplification for, for example, sequencing (col. 10, lines 66-67), or expression for production of the encoded protein.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Claire M. Kaufman, whose telephone number is (571) 272-0873. Dr. Kaufman can generally be reached Monday, Tuesday and Thursday from 8:30AM to 2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tony Caputa, can be reached at (571) 272-0829.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-1600.

Official papers filed by fax should be directed to (571) 272-8300. NOTE: If applicant *does* submit a paper by fax, the original signed copy should be retained by the applicant or applicant's representative. NO DUPLICATE COPIES SHOULD BE SUBMITTED so as to avoid the processing of duplicate papers in the Office.

Claire M. Kaufman, Ph.D.

Claire M. Kaufman

Patent Examiner, Art Unit 1646

February 3, 2005

Comparison of GenBank Accession AF184971 to SEQ ID NO:75 and 76

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LOCUS       AF184971                3485 bp    mRNA    linear   PRI 13-JAN-2000
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DEFINITION  Homo sapiens class II cytokine receptor ZCYTOR7 (ZCYTOR7) mRNA,
            complete cds.
ACCESSION   AF184971
VERSION     AF184971.1  GI:6013324
KEYWORDS    .
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (bases 1 to 3485)
  AUTHORS   Lok,S., Kho,C., Jelmberg,A., Adams,R., Whitmore,T., Farrah,T. and
            O'Hara,P.
  TITLE     Homo sapiens cytokine receptor homolog
  JOURNAL   Unpublished
REFERENCE   2  (bases 1 to 3485)
  AUTHORS   Presnell,S., Gilbert,T., Whitmore,T., Foster,D., Hart,C.,
            Lehner,J., Martinez,T., Hoffman,R. and O'Hara,P.
  TITLE     Direct Submission
  JOURNAL   Submitted (13-SEP-1999) Biomolecular Informatics, ZymoGenetics,
            Inc., 1201 Eastlake Ave. East, Seattle, WA 98102, USA
FEATURES             Location/Qualifiers
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                     DYEHQYYAKVKAIWGTKCSKWAESGRFYPFLETQIGPPEVALTTDEKSISVVLTAPEK
                     WKRNPEDLPVSMQQIYSNLKYNVSVLNTKSNRTWSQCVTNHTLVLTWLEPNTLYCVHV
                     ESFVPGPPRRAQPSEKQCARTLKDQSSEFKAKIIFWYVLPISITVFLFSVMGYSIYRY
                     IHVGKEKHPANLILIYGNEFDKRFFVPAEKIVINFITLNISDDSKISHQDMSLLGKSS
                     DVSSLNDPQPSGNLRPPQEEEEVKHLGYASHLMEIFCDSEENTEGTSFTQQESLSRTI
                     PPDKTVIEYEYDVRTTDICAGPEEQELSLQEEVSTQGTLLESQAALAVLGPQTLQYSY
                     TPQLQDLDPLAQEHTDSEEGPEEEPSTTLVDWDPQTGRLCIPSLSSFDQDSEGCEPSE
                     GDGLGEEGLLSRLYEEPAPDRPPGENETYLMQFMEEWGLYVQMEN"
ORIGIN
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Query Match 89.1%; Score 1552.4; DB 9; Length 3485;
Best Local Similarity 99.9%; Pred. No. 0;
Matches 1553; Conservative 0; Mismatches 2; Indels 0; Gaps 0;

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Qy        189 ATCACAAATTGGCCCACCAGAGGTGGCACTGACTACAGATGAGAAGTCCATTTCTGTTGT 248
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Qy        249 CCTGACAGCTCCAGAGAAGTGGAAGAGAAATCCAGAAGACCTTCCTGTTTCCATGCAACA 308
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Qy        309 AATATACTCCAATCTGAAGTATAACGTGTCTGTGTTGAATACTAAATCAAACAGAACGTG 368
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Qy        609 CCGATATATCCACGTTGGCAAAGAGAAACACCCAGCAAATTTGATTTTGATTTATGGAAA 668
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Qy       1029 TGAAGAGCAGGAGCTCAGTTTGCAGGAGGAGGTGTCCACACAAGGAACATTATTGGAGTC 1088
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Qy       1209 GCCATCGACGACCCTGGTCGACTGGGATCCCCAAACTGGCAGGCTGTGTATTCCTTCGCT 1268
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             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1898 ATGCCAACACTTCCTTTTGCCTTTTGTTTCCTGTGCAAACAAGTGAGTCACCCCTTTGAT 1957

Qy       1509 CCCAGCCATAAAGTACCTGGGATGAAAGAAGTTTTTTCCAGTTTGTCAGTGTCTGTGAGA 1568
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1958 CCCAGCCATAAAGTACCTGGGATGAAAGAAGTTTTTTCCAGTTTGTCAGTGTCTGTGAGA 2017

Qy       1569 ATTACTTATTTCTTTTCTCTATTCTCATAGCACGTGTGTGATTGGTTCATGCATGTAGGT 1628
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2018 ATTACTTATTTCTTTTCTCTATTCTCATAGCACGTGTGTGATTGGTTCATGCATGTAGGT 2077

Qy       1629 CTCTTAACAATGATGGTGGGCCTCTGGAGTCCAGGGGCTGGCCGGTTGTTCTATGCAGAG 1688
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2078 CTCTTAACAATGATGGTGGGCCTCTGGAGTCCAGGGGCTGGCCGGTTGTTCTATGCAGAG 2137

Qy       1689 AAAGCAGTCAATAAATGTTTGCCAGACTGGGTGCAGAATTTATTCAGGTGGGTGT 1743
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2138 AAAGCAGTCAATAAATGTTTGCCAGACTGGGTGCAGAATTTATTCAGGTGGGTGT 2192
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ID   Q9UHF4      PRELIMINARY;      PRT;   553 AA.
AC   Q9UHF4;
DT   01-MAY-2000 (TrEMBLrel. 13, Created)
DT   01-MAY-2000 (TrEMBLrel. 13, Last sequence update)
DT   01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
DE   Class II cytokine receptor ZCYTOR7.
GN   ZCYTOR7.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Lok S., Kho C., Jelmberg A., Adams R., Whitmore T., Farrah T.,
RA   O'Hara P.;
RT   "Homo sapiens cytokine receptor homolog.";
RL   Submitted (OCT-1999) to the EMBL/GenBank/DDBJ databases.
RN   [2]
RP   SEQUENCE FROM N.A.
RA   Presnell S., Gilbert T., Whitmore T., Foster D., Hart C., Lehner J.,
RA   Martinez T., Hoffman R., O'Hara P.;
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RL   Submitted (SEP-1999) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AF184971; AAF01320.1; -.
DR   HSSP; P13726; 2HFT.
DR   Genew; HGNC:6003; IL20RA.
DR   GO; GO:0016021; C:integral to membrane; IEA.
DR   GO; GO:0004896; F:hematopoietin/interferon-class (D200-domain. . .; IEA.
DR   GO; GO:0004872; F:receptor activity; IEA.
DR   GO; GO:0007596; P:blood coagulation; IEA.
DR   InterPro; IPR000282; Cytok_receptor_2.
DR   InterPro; IPR008957; FN_III-like.
DR   InterPro; IPR001187; Tissue_factor.
DR   Pfam; PF01108; Tissue_fac; 1.
KW   Receptor.
SQ   SEQUENCE   553 AA;  62533 MW;  7C23C8543B114659 CRC64;

  Query Match             94.8%;  Score 2203;  DB 4;  Length 553;
  Best Local Similarity   94.2%;  Pred. No. 1.7e-174;
  Matches  423;  Conservative    6;  Mismatches    6;  Indels   14;  Gaps    3;

Qy          7 HQRVFKELKLL--TLCS-----------ISSQIGPPEVALTTDEKSISVVLTAPEKWKRN 53
              ||  : ::| :  | ||           : :|||||||||||||||||||||||||||||
Db        106 HQ-YYAKVKAIWGTKCSKWAESGRFYPFLETQIGPPEVALTTDEKSISVVLTAPEKWKRN 164

Qy         54 PEDLPVSMQQIYSNLKYNVSVLNTKSNRTWSQCVTNHTLVLTWLEPNTLYCVHVESFVPG 113
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        165 PEDLPVSMQQIYSNLKYNVSVLNTKSNRTWSQCVTNHTLVLTWLEPNTLYCVHVESFVPG 224

Qy        114 PPRRAQPSEKQCARTLKDQSSEFKAKIIFWYVLPISITVFLFSVMGYSIYRYIHVGKEKH 173
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        225 PPRRAQPSEKQCARTLKDQSSEFKAKIIFWYVLPISITVFLFSVMGYSIYRYIHVGKEKH 284

Qy        174 PANLILIYGNEFDKRFFVPAEKIVINFITLNISDDSKISHQDMSLLGKSSDVSSLNDPQP 233
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        285 PANLILIYGNEFDKRFFVPAEKIVINFITLNISDDSKISHQDMSLLGKSSDVSSLNDPQP 344

Qy        234 SGNLRPPQEEEEVKHLGYASHLMEIFCDSEENTEGTSLTQQESLSRTIPPDKTVIEYEYD 293
              |||||||||||||||||||||||||||||||| ||||||||||||||||||||||||||
Db        345 SGNLRPPQEEEEVKHLGYASHLMEIFCDSEENTEGTSFTQQESLSRTIPPDKTVIEYEYD 404

Qy        294 VRTTDICAGPEEQELSLQEEVSTQGTLLESQAALAVLGPQTLQYSYTPQLQDLDPLAQEH 353
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        405 VRTTDICAGPEEQELSLQEEVSTQGTLLESQAALAVLGPQTLQYSYTPQLQDLDPLAQEH 464

Qy        354 TDSEEGPEEEPSTTLVDWDPQTGRLCIPSLSSFDQDSEGCEPSEGDGLGEEGLLSRLYEE 413
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        465 TDSEEGPEEEPSTTLVDWDPQTGRLCIPSLSSFDQDSEGCEPSEGDGLGEEGLLSRLYEE 524

Qy        414 PAPDRPPGENETYLMQFMEEWGLYVQMEN 442
              |||||||||||||||||||||||||||||
Db        525 PAPDRPPGENETYLMQFMEEWGLYVQMEN 553
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